



# SAFETY ALERT

## Heat Injury Prevention

12 May 2003



### Risk Management:

1. Determine Heat Category ( See Table).
2. Enforce appropriate water intake and work/rest cycles (See Table).
3. Modify intensity of activity and uniform to decrease risk.
4. Plan events involving high performance training.
5. Allow train-up conditioning and time for fluid replenishment, rest and recovery.

### Work/Rest/Water Consumption Table

*Applies to average sized, heat acclimated soldier wearing BDU, hot weather*

Easy Work	Moderate Work	Hard Work
<ul style="list-style-type: none"> <li>• Weapon Maintenance</li> <li>• Walking Hard Surface at 2.5 mph, &lt; 30 lb Load</li> <li>• Marksmanship Training</li> <li>• Drill and Ceremony</li> </ul>	<ul style="list-style-type: none"> <li>• Walking Loose Sand at 2.5 mph, No Load</li> <li>• Walking Hard Surface at 3.5 mph, &lt; 40 lb Load</li> <li>• Calisthenics</li> <li>• Patrolling</li> <li>• Individual Movement Techniques, i.e. Low Crawl, High Crawl, etc.</li> </ul>	<ul style="list-style-type: none"> <li>• Walking Hard Surface at 3.5 mph, ≥ 40 lb Load</li> <li>• Walking Loose Sand at 2.5 mph with Load</li> <li>• Field Assaults</li> </ul>

Heat Category	WBGT Index, F°	Easy Work		Moderate Work		Hard Work	
		Work/Rest	Water Intake (Qt/H)	Work/Rest	Water Intake (Qt/H)	Work/Rest	Water Intake (Qt/H)
1	78° - 81.9°	NL	¼	NL	¼	40/20 min	¼
2 (GREEN)	82° - 84.9°	NL	¼	50/10 min	¼	30/30 min	1
3 (YELLOW)	85° - 87.9°	NL	¼	40/20 min	¼	30/30 min	1
4 (RED)	88° - 89.9°	NL	¼	30/30 min	¼	20/40 min	1
5 (BLACK)	> 90°	50/10 min	1	20/40 min	1	10/50 min	1

- The work-rest times and fluid replacement volumes will sustain performance and hydration for at least 4 hours of work in the specified heat category. Fluid needs can vary based on individual differences ( $\pm \frac{1}{4}$  qt/h) and exposure to full sun or full shade ( $\pm \frac{1}{4}$  qt/h).
- NL = no limit to work time per hour.

- Rest means minimal physical activity (sitting or standing), accomplished in shade if possible.

- **CAUTION: Hourly fluid intake should not exceed 1½ quarts.**

*Daily fluid intake should not exceed 12 quarts.*

- If wearing body armor add 5°F to WBGT in humid climates.

- If wearing NBC clothing (MOPP 4) add 10°F to WBGT.

### Precautions:

- Soldiers need time to adjust. Full acclimatization can take up to 2 weeks.
- Gradually increasing work in heat allows for adaptation in hot climates.
- Soldiers recovering from injury/illness or in poor condition are at higher risk.
- Dehydration can worsen over several days of heat exposure.
- Acclimatization increases water requirements. Ensure fluid intake is increased.
- Adequate hydration is essential the night prior to strenuous activities.
- Heat stress accumulates during sequential days of strenuous activities.
- Encourage soldiers to eat regular meals to replace salt. Tablets are unnecessary.
- Certain dietary supplements (e.g. Ephedra, Ma Juang) and medications (e.g. Cold and Allergy medications) increase the risk of heat injuries. Warn soldiers prior to rigorous physical training.
- Medically screen soldiers with acute or chronic medical problems, those taking prescription medications, over-the-counter medications or dietary supplements and those with prior history of heat injury.

### REFERENCES:

<http://chppm-www.apgea.army.mil/heat/>

TB MED 507M PREVENTION, TRAINING AND CONTROL OF HEAT INJURY, MAR 03

FM 21-10, FIELD HYGIENE AND SANITATION, JUN 00

FM 21-1, FOOT MARCHES, JUN 90

FM 21-20W/CHG 1, PHYSICAL FITNESS TRAINING

FM 4-10.17, PREVENTIVE MEDICINE SERVICES, AUG 02

FM 4-25.12, UNIT FIELD SANITATION TEAM, JAN 02

AE PAM 385-15 LEADERS OPERATIONAL ACCIDENT PREVENTION GUIDE

COUNTERMEASURE, APR 03